

PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

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| Applicant's or agent's file reference Neikov 04-6 | FOR FURTHER ACTION See Form PCT/IPEA/416 | |
| International application No. PCT/BG 2004/000006 | International filing date (day/month/year) 17 March 2004 (17.03.2004) | Priority date (day/month/year) 17 March 2003 (17.03.2003) |
| International Patent Classification (IPC) or national classification and IPC F16H 48/26 | | |
| Applicant GANCHEV, Stilian | | |
| <p>1. This report is the international preliminary examination report, established by the International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>4</u> sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input type="checkbox"/> (sent to the applicant and to the International Bureau) a total of _____ sheets, as follows:</p> <p><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of the report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> Sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p> <p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p> | | |
| Date of submission of the demand 27 October 2004 (27.10.2004) | Date of completion of this report 19 May 2005 (19.05.2005) | |
| Name and mailing address of the IPEA/RU FIPS Russia, 123995, Moscow, G-59, GSP-5, Berezhkovskaya nab., 30-1 Facsimile No. | Authorized officer G. Kuznetsova Telephone No. 240-25-91 | |

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/BG 2004/000006

Box No. I Basis of the opinion

1. With regard to the language, this report is based on:

- ☐ the international application in the language in which it was filed
- ☐ a translation of the international application into _____, which is the language of a translation furnished for the purposes of:
- ☐ international search (Rules 12.3(a) and 23.1(b))
- ☐ publication of the international application (Rule 12.4(a))
- ☐ international preliminary examination (Rules 55.2(a) and/or 55.3(a))

2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this opinion as "originally filed.")*:3. ☒ the international application as originally filed/furnished☐ the description:

pages _____ as originally filed/furnished

pages* _____ received by this Authority on _____

pages* _____ received by this Authority on _____

☐ the claims:

pages _____ as originally filed/furnished

pages* _____ as amended (together with any statement) under Article 19

pages* _____ received by this Authority on _____

pages* _____ received by this Authority on _____

☐ the drawings:

pages _____ as originally filed/furnished

pages* _____ received by this Authority on _____

pages* _____ received by this Authority on _____

☐ a sequence listing and/or any related table(s) see Supplemental Box Relating to Sequence Listing.3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☐ the claims. Nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (specify): _____
- ☐ any table(s) related to the sequence listing (specify): _____

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages _____
- ☐ the claims. Nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (specify): _____
- ☐ any table(s) related to the sequence listing (specify): _____

* If item 4 applies, some or all of those sheets may be marked "superseded".

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/BG 2004/000006

Box No. V Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

| | | | |
|-------------------------------|--------|-----|-----|
| Novelty (N) | Claims | 1-5 | YES |
| | Claims | | NO |
| Inventive Step (IS) | Claims | 1-5 | YES |
| | Claims | | NO |
| Industrial Applicability (IA) | Claims | 1-5 | YES |
| | Claims | | NO |

2. Citations and explanations:

While drawing up the INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY the following documents have been taken into account:

D1 : WO 2000/28240 A1,
D2 : SU 291815 A,
D3 : US 2789447 A,

There is declared a control device for a hydraulic differential , which is characterized in the scope of Claim 1 to 5 of the Patent Claims of the invention.

A control device for a hydraulic differential, declared in accordance with Claim 1, is characterized in that it contains two integrated within the common driving unit of the hydraulic differential control hydraulic loops having a distributor embodied as a common gate mechanism, wherein each of the hydraulic loops includes two main collectors of toroidal configuration, and control branches with electromagnetically actuating of their control elements, besides, the gate of the main distributor represents by itself a rotating body in a form of a cylinder having an axial opening , wherein at equal distances from the ends of the cylinder two identical discs thinned towards their periphery are formed in such a manner that the gate is symmetrical with respect to the plane crossing perpendicularly the middle of its longitudinal axis, and the interior of the body of the main distributor has the same parameters of symmetry and it is configured in such a manner that only in a neutral position of the gate at both sides of each disc separate chambers insulated from each other are formed, wherein the chambers at each side of the gate are connected with areas of high and low pressure in separate hydraulic loops in such a manner that the pressures of both loops have opposite directions to the discs of the gate along its longitudinal axis, and the cross point of the longitudinal axis of the gate and its transverse plane of symmetry lies on this side of the rotating axis of the differential which crosses its common driving unit.

A control device for a hydraulic differential , disclosed in D1, is the closest analogue with respect to the device, declared in accordance with Claim 1, and comprises two control hydraulic loops, which are integrated within the common driving unit of the hydraulic differential, have a distributor, which is embodied as a common gate mechanism and control branches.

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of:

The declared invention differs from the invention, which is disclosed in D1, in that the gate of the main distributor represents by itself a rotating body in a form of a cylinder having an axial opening wherein at equal distances from the ends of the cylinder two identical discs thinned towards their periphery are formed in such a manner that the gate is symmetrical with respect to the plane crossing perpendicularly the middle of its longitudinal axis, and the interior of the body of the main distributor has the same parameters of symmetry and it is configured in such a manner that only in a neutral position of the gate at both sides of each disc separate chambers insulated from each other are formed, wherein the chambers at each side of the gate are connected with areas of high and low pressure in separate hydraulic loops, in such a manner that the pressures of both loops have opposite directions to the discs of the gate along its longitudinal axis, and the cross point of the longitudinal axis of the gate and its transverse plane of symmetry lies on this side of the rotating axis of the differential which crosses its common driving unit, wherein each of the hydraulic loops includes two main collectors of toroidal configuration, but the control branches have an electromagnetically actuating of their control elements.

Therefore, Claim 1 and the dependent Claims 2 to 3 meet the criterion of novelty.

The devices, which are disclosed in D2 to D5, have no mentioned distinctive features, which in combination with the known features allow to provide with an even distribution of the driving torques for the both directions of rotation upon the improvement of weight parameters and overall dimensions. These features are not obvious ones for a person with the ordinary skills in the art.

Therefore, Claim 1 and the dependent Claims 2 to 5 meet the criterion of inventive step.

All the Claims 1 to 5 meet the criterion of industrial applicability.